

REMARKS

This Amendment, submitted in response to the non-final Office Action dated August 11, 2005, is believed to be fully responsive to the points of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 1-11 are pending. Claims 12-45 are cancelled above in response to the restriction requirement dated July 12, 2005.

Claims 1 and 6-11 have been rejected under 35 USC 102(b) over U.S. Patent No. 6,062,018 (Bussing). Claims 1 and 6-11 have been rejected under 35 USC 102(e) over published U.S. Patent Application No. 2005/0019620 (Schick). Claims 1-11 have been rejected under 35 USC 103(a) over Bussing in view of either Cooper et al. or Russian Abstract 2034996C and optionally in further view of U.S. Patent No. 5,847,353 (Titus). Claims 1-11 have been rejected under 35 USC 103(a) over Bussing, in view of Ma et al. and U.S. Patent No. 4,287,377 (Maslin), and optionally in further view of Titus. Applicants respectfully submit the following comments in support of the patentability of the Claims. Reconsideration of the rejections in view of the following remarks is respectfully requested.

1. 35 USC 102(b):

Claims 1 and 6-11 have been rejected under 35 USC 102(b) over U.S. Patent No. 6,062,018 (Bussing).

Claim 1 is directed to a power system comprising a fuel preconditioner adapted to convert a fuel to at least one conditioned fuel. The power system further includes a pulse detonation combustor adapted to receive the conditioned fuel and a primary oxidizer and to detonate a mixture comprising the conditioned fuel and the primary oxidizer and exhaust a plurality of detonation products. The power system further includes a turbine positioned downstream from the pulse detonation combustor. The turbine is in flow communication with the pulse detonation combustor.

Bussing is directed to a pulse detonation electrical power generation apparatus with water injection. Bussing does not disclose a fuel preconditioner adapted to convert a fuel to at least one conditioned fuel, as recited by Claim 1. Rather, the Examiner cites the predetonation chamber 472 of Bussing to supply this element. However, predetonation

chamber 472 does not convert a fuel into at least one preconditioned fuel as recited by Claim 1. Instead, predetonation chamber 472 serves to directly initiate the primary detonation of the fuel/air mixture in the main chamber 104 and thus does not convert a fuel into a preconditioned fuel but rather detonates the fuel. (Col. 12, lines 46-49) As explained, the fuel/air mixture is supplied to main chamber 104 separately. Separate from predetonator 474, the fuel and air are metered by a rotary valve 103 for injection into mixing chamber 470 (Col. 12, lines 48-52; FIG. 10).

For at least these reasons, Bussing does not disclose every feature of Claim 1. As Claims 6-11 depend from Claim 1, they are also not anticipated by Bussing for at least these reasons. Accordingly, Applicants respectfully request that the rejections of Claims 1 and 6-11 under 35 USC 102(b) over Bussing be withdrawn.

2. 35 USC 102(e):

Claims 1 and 6-11 have been rejected under 35 USC 102(e) over Schick. Applicants note that the attached Affidavit under 37 CFR 1.131 and supporting Exhibits A and B establish a date of invention prior to July 21, 2003, which is the filing date of commonly assigned published U.S. Patent Application No. 2005/0019620 (Schick). Accordingly, Applicants submit that Schick is not prior art under 35 USC 102(e), nor does Schick qualify as prior art under any other provision of 35 USC 102.

In view of the above, Applicants respectfully request that the rejections of Claims 1 and 6-11 under 35 USC 102(e) over Schick be withdrawn.

3. 35 USC 103(a):

a. Claims 1-11 have been rejected under 35 USC 103(a) over Bussing in view of either Cooper et al. or Russian Abstract 2034996C and optionally in further view of Titus.

As discussed above, Bussing does not disclose a fuel preconditioner adapted to convert a fuel to at least one conditioned fuel, as recited by Claim 1. Rather, the Examiner cites the predetonation chamber 472 of Bussing to supply this element. However, predetonation chamber 472 does not convert a fuel into at least one preconditioned fuel as recited by Claim 1. Instead, predetonation chamber 472 serves to directly initiate the primary detonation of the fuel/air mixture in the main chamber 104

and thus does not convert a fuel into a preconditioned fuel but rather detonates the fuel. (Col. 12, lines 46-49)

As noted by the Examiner, Bussing does not teach pyrolyzing the fuel to precondition the fuel. The Examiner cites Cooper to supply this deficiency of Bussing. Applicants note that the attached Affidavit under 37 CFR 1.131 and supporting Exhibits A and B establish a date of invention prior to July 20, 2003. Cooper has a conference date of July 20-23, 2003. Accordingly, Applicants submit that Cooper is not prior art under 35 USC 102(a). Applicants further note that the present application was filed on November 25, 2003. Therefore, Cooper is not prior art under 35 USC 102(b). Nor does Cooper qualify as prior art under any other provision of 35 USC 102.

The Examiner further cites Russian Abstract 2034996C as teaching pyrolysis of a fuel. However, based on Applicants' understanding of the English language abstract and figure provided by the Examiner, by "pyrolysis" Russian Abstract 2034996C means partial oxidation of the fuel (that is, fuel burning in air) at element 2. As note on page 5, lines 11-12, the present application defines pyrolysis to "exclude[] the use of air." Thus, Russian Abstract 2034996C does not teach pyrolysis of a fuel, as used in the present application.

The Examiner cites Titus as disclosing a plasma fuel pyrolyzer 634. Titus is directed to "Methods and apparatus for low NOx emissions during the production of electricity from waste treatment systems" and is not directed to the use of a plasma fuel pyrolyzer in a power system comprising a pulse detonation combustor, as recited by Claim1.

In view of the above, Applicants respectfully submit that Claim 1 is patentably distinguishable over the cited art, either alone or in combination. Further, as claims 2-11 depend from claim 1, these claims are also patentably distinguishable over the cited art for at least these reasons. Accordingly, Applicants respectfully request that the rejections of Claims 1-11 under 35 USC 103(a), over Bussing in view of either Cooper et al. or Russian Abstract 2034996C and optionally in further view of Titus, be withdrawn.

b. Claims 1-11 have been rejected under 35 USC 103(a) over Bussing, in view of Ma et al. and Maslin, and optionally in further view of Titus.

As discussed above, Bussing does not disclose a fuel preconditioner adapted to convert a fuel to at least one conditioned fuel, as recited by Claim 1. Rather, the Examiner cites the predetonation chamber 472 of Bussing to supply this element. However, predetonation chamber 472 does not convert a fuel into at least one preconditioned fuel as recited by Claim 1. Instead, predetonation chamber 472 serves to directly initiate the primary detonation of the fuel/air mixture in the main chamber 104 and thus does not convert a fuel into a preconditioned fuel but rather detonates the fuel. (Col. 12, lines 46-49)

As noted by the Examiner, Bussing does not teach pyrolyzing the fuel to precondition the fuel. The Examiner cites Ma to supply this deficiency of Bussing. Ma is directed to fuel measurements for pulse detonations engines using diode-laser absorption sensors (Abstract). Applicants respectfully submit that Ma does not teach any of: a fuel preconditioner comprising a heat source configured to heat the fuel so as to pyrolyze the fuel as recited by Claim 2, a fuel preconditioner further comprising a catalyst adapted to enhance the pyrolysis of the fuel as recited by Claim 3, a fuel preconditioner comprising a plasma source configured to pyrolyze the fuel as recited by Claim 4, or a fuel preconditioner comprising a catalyst adapted to pyrolyze the fuel as recited by Claim 5. Rather, the portion of Ma cited by the Examiner (p 161, first paragraph) states that recent PDE research has frequently used gaseous C_2H_4 fuel because it is easily detonable and because liquid fuels envisaged for practical PDEs are expected to pyrolyze to C_2H_4 or C_2H_4 -like species before detonation events. In particular, Applicants respectfully submit that Ma does not teach or suggest a fuel preconditioner, as recited by Claims 1-5 of the present application.

The Examiner further cites Maslin as teaching that it is known to pyrolyze methane in a reactor via a heat source and/or catalytically prior to combustion in a turbine. Maslin is directed to a process and apparatus for effecting hydrocarbon conversion in a hydrocarbon conversion furnace (col. 1, lines 4-6) and is not directed to the use of pyrolysis in a power system comprising a pulse detonation combustor, as recited by Claim 1. Thus, Maslin does not supply the above-discussed deficiencies of Bussing and Ma with respect to Claim 1.

The Examiner further cites Titus as disclosing a plasma fuel pyrolyzer 634. Titus is directed to "Methods and apparatus for low NO_x emissions during the production of electricity from waste treatment systems" and is not directed to the use of a plasma fuel pyrolyzer in a power system comprising a pulse detonation combustor, as recited by

Claim 1. Thus, Titus does not supply the above-discussed deficiencies of Bussing, Ma and Maslin with respect to Claim 1.

In view of the above, Applicants respectfully submit that Claim 1 is patentably distinguishable over the cited art, either alone or in combination. Further, as claims 2-11 depend from claim 1, these claims are also patentably distinguishable over the cited art for at least these reasons. Accordingly, Applicants respectfully request that the rejections of Claims 1-11 under 35 USC 103(a), over Bussing, in view of Ma et al. and Maslin, and optionally in further view of Titus, be withdrawn.

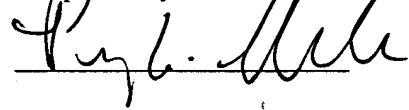
CONCLUSION

In view of the foregoing, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are respectfully requested.

Please charge all applicable fees associated with the submittal of this Amendment and any other fees applicable to this application to the Assignee's Deposit Account No. 07-0868.

Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact Applicants' undersigned representative at the telephone number below.

Respectfully submitted,



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